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10/581,511	02/27/2007	Katja Berg-Schultz	21902US(C038435/0198732)	8417
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Bryan Cave LLP 1290 Avenue of the Americas New York, NY 10104			EXAMINER POURBOHLOUL, SARIRA CAMILLA	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/581,511

Applicant(s)

BERG-SCHULTZ, KATJA

Examiner

S. CAMILLA POURBOHLOUL

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 May 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13 and 26-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 13 and 26-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SI.08)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Interval Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

This action is responsive to the amendment filed on May 24, 2010.

Claims 13, 26-32 are pending. Claims 1-12, 14-25 have been canceled. Claim 13 has been amended.

Rejection of claims 1-13 are withdrawn in view of Applicant's amendments and arguments.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 13, 26-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Spange et al. (Angew. Chem. Int. Ed. 2002, 41, 10, 1729-1732).

Regarding claim 13, Spange et al. discloses a chromophoric silicate-based xerogel wherein the encapsulated components show improved retention within the microcapsule due to a new sol-gel procedure (pg. 1729, left column, second paragraph). The first step of the encapsulation procedure involves the covalent modification of a trialkoxysilane with an organic (e.g. chromophoric) group (reads on the crosslinkable chromophore monomer of the instant invention) (pg. 1729, left column, second paragraph). More specifically, a fluorine atom in a chromophoric substance such as fluorobenzophenone, a UV-A absorber (reads on the UV-A filter activity of the

crosslinkable monomer of the instant invention) (pg. 1729, right column, first paragraph; Table 1) is substituted by a primary or secondary amine bonded to an alkoxy silane in tetraethoxysilane (TEOS) (e.g. aminopropyltrimethoxysilane, APS). The functionalized trialkoxysilane is subsequently converted into an organically modified silica gel (i.e. sol-gel hybrid; page 1729, Scheme 1) by addition of tetraalkoxysilane (reads on the crosslinkable monomer of the instant invention) in the absence of a non-crosslinkable chromophore (pg. 1729, left column, third paragraph).

Although, Spange does not refer to its silicate-based xerogel as a sunscreen composition, however, due to the elements and nature of xerogel composition, the xerogel composition of Spange would be expected to possess the same suncreening abilities as that of the instant invention.

Regarding claim 26, Spange et al. discloses a sol-gel chromophore hybrid containing a chromophore with UV-A and/or UV-B filter activity such as fluorobenzophenone (page 1729, right column, first paragraph). The spacer group $(B)_b(C)_c(D)_d(E)_e$ is optional because b, c, d, and e could be 0 or 1.

Regarding claims 27, 28, Spange et al. discloses a sol-gel process resulting in a sol-gel hybrid material (equivalent of the crosslinkable chromophore with UV filter activity) (Scheme 1: page 1729, right column) is a crosslinkable monomer prepared by reacting a UV-A, UV-B, and/or UV-C chromophore such as a fluorinated benzophenone (equivalent of "P" of the general formula $M(R)_n(P)_m(Q)_q$ of the instant invention) with a aminoalkylalkoxysilane (APS) to give rise to a chromophoric xerogel such as 4-fluorobenzophenone:aminopropyltrimethoxysilane (APS) (equivalent of the

chromophore monomer of Ex. 1: (triethoxysilyl)propyloxyphenyl-benzoxazole, and equivalent of the $M(R)_n(P)_m(Q)_q$ where M is a silicon element, R is hydrolysable group such as an alkoxides and Q is a non-hydrolyzable group such as an C_1-C_6 alkyl group as cited in paragraph 18-26 of the specification) (page 1730, Table 1; page 1730, right column, first paragraph).

Regarding claim 29, Spange et al. discloses a sol-gel chromophore hybrid containing a silane with at least two C_{1-6} alkoxy groups (fluorobenzophenone:aminopropyltrimethoxysilane) (page 1730, Table 1).

Regarding claim 30, Spange et al. discloses using a crosslinkable silane monomer in the process of sol-gel chromophore hybrid production, wherein the silane monomer is tetraethoxysilane (reads on at least two C_{1-6} alkoxy groups of the instant claim) (page 1729, left column, third paragraph).

Regarding claim 31, Spange et al. discloses that when chromophoric substances such as 4-nitroaniline derivatives are incorporated into the silicate matrix, uniformly spherical particles with a narrow size-distribution of less than $2\mu m$ in diameter are formed (page 1729, right column, second paragraph; page 1731: figure 2).

Regarding claim 32, Spange discloses that the sol-gel materials prepared using this method contains up to 20% organofunctionalized silane (chromophoric silane) (pg. 1729, right column, second paragraph).

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 13, 26-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Avnir et al. (US 6,159,453).

Regarding claims 13 and 26, Avnir et al. discloses a method of preparing a sol-gel material with trapped sunscreen comprising condensation-polymerization of at least one monomer selected from metal alkoxides and from monomers of the formula $M(R)_n(P)_m$, wherein M is a metallic or semi metallic element (such as silicon, titanium, zinc, aluminum, zirconium) R is a hydrolyzable substituent (such as alkoxides, aryloxides, carboxylic esters, acyloxy groups, diketono groups, hydrolyzable aza groups and chlorine), n is an integer from 2 to 6, P is a non polymerizable substituent (reads on the crosslinkable monomer of the instant invention) or a sunscreensing moiety or derivative (reads on the crosslinkable chromophore monomer of the instant invention) and m is an integer from 0 to 6, in the presence of at least one sunscreen ingredient, resulting in the entrapment of the sunscreen ingredients within the formed sol-gel matrix (col. 3, lines 33-46).

Regarding claims 27, 28, 30, Avnir teaches using a combination of tri- and tetra-alkoxysilane monomers (col. 4, lines 48-51; col. 5, lines 44-48) in the presence of basic or acidic catalysts for entrapping sunscreen agents such as cinnamate, salicylate, and benzophenone (col. 6, lines 8-27), as well as surfactants (col. 5, lines 51-67).

Regarding claim 29, Avnir et al. teaches chromophoric monomers of the formula $M(R)_n(P)_m$, with R being a hydrolysable group such as an alkoxides group and n is an

integer from 2-6 (col. 3, lines 33-46) (reads on at least two C₁₋₆ alkoxy groups of the instant claim).

Regarding claim 31, Avnir et al. discloses the sol-gel matrices are particles in the range of 0.01-100 microns in diameter (col. 3, lines 8-31).

Although, Avnir's sunscreen composition contains non-crosslinkable chromophores in addition to crosslinkable chromophores, it is the examiner's position that one of ordinary skill in the art would find it obvious not to include the extra sunscreensing component to the sol-gel composition as long as a satisfactory sunscreensing effect is achieved with the crosslinkable chromophores alone.

Avnir teaches that its sol-gel sunscreen material comprises two components: one is a metal alkoxide monomer of formula $M(R)_n(P)_m$ which contains a sunscreensing moiety "P", and a noncrosslinked sunscreen monomer. It would be obvious to one skilled in the art to leave out the non-crosslinkable sunscreen moiety as long as there is a sunscreen component present in the sol-gel matrix in order to reduce the chances of getting free sunscreen monomers in contact with skin and thus improve the safety of the sunscreen composition.

The prior art has recognized the problem with absorption of chromophore monomers in sunscreen products and has proposed and invented a sunscreen product that isolated chemical sunscreens from the body and reduced the chances of the skin coming in contact with free chromophore (col. 1, lines 55-66). Along the same line of reasoning, it would be obvious not to include a non-crosslinkable chromophore in the

sunscreen component if there is enough of the crosslinkable chromophore attached to the metal alkoxide monomer.

Furthermore, the applicant is taking a step backward to omit part of a sunscreen which is not desired to possibly make it more cost efficient or to make it more leach proof. Elimination of an element and its function is obvious if the function of the element is not desired. See MPEP 2144.04II. Ex parte Wu , 10 USPQ 2031 (Bd. Pat. App. & Inter. 1989)

Claim Rejections - 35 USC § 103

Claims 13, 26-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spange et al. (US 6,159,453) in view of Avnir et al. (WO 03/032959).

Spange is set forth in claims 13, 26-32 above and incorporated herein. Although, Spange teaches a method of encapsulating chromophores with an improved sol-gel process, It fails to teach its product used in a sunscreen composition. However, Avnir et al. teaches a method of entrapping chromophore derivatives in a sol-gel composition wherein the product is utilized as a sunscreen composition (col. 3, lines 15-17). Avnir et al. teaches that due to the carcinogenic nature of chemical sunscreens, it is essential to isolate the chemical sunscreen agents from the body while retaining the sunscreen ability to absorb light (col. 1, lines 65-col.2, lines 1-5). Avnir et al. teaches that its sol-gel matrices are transparent to the UV radiation and thus allow light to reach the UV absorbing chromophores (col. 3, lines 18-22), while isolating the chromophores from skin, preventing its absorption and thus protecting the skin. Therefore, it would have

been obvious to one of ordinary skill in the art to apply a UV absorbing agent as a sunscreen agent as taught by Avnir et al. to the transparent sol-gel matrix of Spange et al. in order to entrap and isolate the sunscreen agent from the body.

Response to Arguments

Applicant's arguments, see page 10, last paragraph and page 14, first paragraph, filed May 19, 2010, with respect to the rejection(s) of claim(s) 1-13 under 35 USC 102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of a different interpretation of teachings of Spange et al.

Applicant argues that Spange et al. does not disclose sunscreen compositions. However, the sol-gel composition of Spange comprises basically the same ingredients as recited in claim 13 and regardless of what type of substrate it is applied to it would hold the same suncreening ability as the present invention whether or not the authors of have recognized this aspect of their invention.

Furthermore, if the sol-gel composition of hybrid composition of Spange is applied over the surface of objects intended to be used by the prior art (e.g. semiconductors or sensors), it would still protect the surface against sun damage as well as the sol-gel composition of the instant invention.

Applicant contends that the sol-gel sunscreen composition of Avnir is different from the sunscreen composition of the instant invention because the prior art's

composition is doped with a noncrosslinked sunscreen monomer. However, eliminating or omitting a non-essential or damaging component from a composition would seem to be obvious to one of ordinary skill in the art, See MPEP 2144.04II. Avnir teaches that its sol-gel sunscreen material comprises two components: one is a metal alkoxide monomer of formula $M(R)_n(P)_m$ which contains a sunscreensing moiety "P", and a noncrosslinked sunscreen monomer. It would be obvious to one skilled in the art to leave out the non-crosslinkable sunscreen moiety as long as there is a sunscreen component present in the sol-gel matrix in order to reduce the chances of getting free sunscreen monomers in contact with skin and thus improve the safety of the sunscreen composition.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to S. CAMILLA POURBOHLOUL whose telephone number is (571)270-7744. The examiner can normally be reached on M-F 8:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/James J. Seidleck/
Supervisory Patent Examiner, Art Unit 1796

/SCP/